



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/732,773	12/11/2000	Chang Hee Lee	EM/LEE/6287	2723
7590 12/17/2004				
BACON & THOMAS, PLLC 625 Slaters Lane - 4th Floor Alexandria, VA 22314-1176			EXAMINER PAYNE, DAVID C	
			ART UNIT 2633	PAPER NUMBER

DATE MAILED: 12/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/732,773

Applicant(s)

LEE ET AL.

Examiner

David C. Payne

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2003.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 15-56 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 15-56 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 11 December 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 8/8/2003.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 15-27, 32-36, 38-44 rejected under 35 U.S.C. 103(a) as being unpatentable over Ryu US 5,793,512 (Ryu) and Boivin et al. US 6,137,611 (Boivin).

Re claim 15 and 22,

Ryu disclosed injecting a laser device (e.g., col./line: 5/25-35) but does not disclose externally injecting a narrow-band incoherent light signal into a light source capable of lasing; suppressing the lasing modes outside of a bandwidth of the injected incoherent light signal by injecting the narrow-band incoherent light signal; and locking an output wavelength of the light source capable of lasing within the bandwidth of the injected incoherent light.

Boivin disclosed where LEDs could be used as a source (1 of Figure 2 in Ryu) for a mode-locked laser (e.g., col./line: 6/20-25). It would have been obvious to one of ordinary skill in the art at the time of invention to use the LED as injection source in the Ryu invention in order to gain inexpensive wavelength source since LEDs are known to be cheaper than lasers.

Re claim 19, 26, 32, 34, 35, 36, 39-44,

The modified invention as taught further disclosed a demultiplexer/divider (6 of Figure 2,

Art Unit: 2633

Ryu) and a plurality of invention mode locked lasers (5 of Figure 2 Ryu). Boivin disclosed these as Fabry-Perot laser diodes (col./line: 2/15-20).

Re claims 16, 20, 23, 27 and 38, the modified invention of Ryu and Boivin as taught disclosed generating the incoherent light signal from an optical fiber amplifier (Boivin, col./line: 6/20-25).

Re claim 21, the modified invention of Ryu and Boivin as taught does not disclose wherein the lasing modes outside of the bandwidth of the injected incoherent light incur a side mode suppression ratio of ten decibels or more. However, it would have been obvious to one of ordinary skill in the art at the time of invention to suppress side bands 10 db or more since this would totally eliminate outside wavelengths. Lacking any criticality no patentable weight can be given to the claim.

Re claims 17 and 24, the modified invention of Ryu and Boivin as taught disclosed generating the incoherent light signal from a light emitting diode (Boivin, col./line: 6/20-25).

Re claims 18 and 25, the modified invention of Ryu and Boivin as taught does not disclose generating the incoherent light signal from a super-luminescent diode. However, it would have been obvious to one of ordinary skill in the art at the time of invention that super-luminescent diodes merely exhibit a broader spectrum of wavelength than and LED and both thereby produce multiple wavelengths that are useful to inject into a lasing element.

Art Unit: 2633

Re claim 33, the modified invention of Ryu and Boivin as taught disclosed using polarizers (Ryu, 65 of Figure 7).

3. Claims 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ryu US 5,793,512 (Ryu) and Boivin et al. US 6,137,611 (Boivin) and Feldman US 6,650,840 B2 (Feldman).

Re claim 28,

Ryu disclosed injecting a laser device (e.g., col./line: 5/25-35) but does not disclose externally injecting a narrow-band incoherent light signal into a light source capable of lasing; suppressing the lasing modes outside of a bandwidth of the injected incoherent light signal by injecting the narrow-band incoherent light signal; and locking an output wavelength of the light source capable of lasing within the bandwidth of the injected incoherent light, and an optical circulator coupled to a coherent light source capable of lasing, wherein the optical circulator routes a spectral slice of the incoherent light to the coherent light source capable of lasing, the coherent light source capable of lasing emits a wavelength-selective output locked by the spectrally sliced incoherent light, and the optical circulator separates the output of the coherent light source capable of lasing from the broadband incoherent light.

Boivin disclosed where LEDs could be used as a source (1 of Figure 2 in Ryu) for a mode-locked laser (e.g., col./line: 6/20-25). It would have been obvious to one of ordinary skill in the art at the time of invention to use the LED as injection source in the Ryu invention in order to gain inexpensive wavelength source since LEDs are known to be cheaper than lasers.

Feldman disclosed an optical circulator between the incoherent and coherent light

Art Unit: 2633

sources (see Figure 6b). It would have been obvious to one of ordinary skill in the art at the time of invention to use circulator in the Ryu invention since circulators are well known devices used as coupling three or more optical branches.

Re claim 29, the modified invention of Ryu, Boivin and Feldman as taught disclosed using polarizers (Ryu, 65 of Figure 7).

Re claim 30, the modified invention of Ryu, Boivin and Feldman as taught disclosed using filters (Ryu, 68 of Figure 7).

Re claim 31 the modified invention of Ryu, Boivin and Feldman as taught disclosed using Fabry-Perot laser diodes (Boivin , col./line: 2/15-20).

4. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ryu US 5,793,512 (Ryu) and Boivin et al. US 6,137,611 (Boivin) as applied to claim 35 above, and in further view of Feldman US 6,650,840 B2 (Feldman).

Re claim 37, the modified invention of Ryu, Boivin does not disclose an optical circulator coupled to the incoherent light source, wherein the optical circulator routes the broadband incoherent light to the demultiplexer and separates an output signal of the demultiplexer from the broadband incoherent light. Feldman disclosed an optical circulator between the incoherent and coherent light sources (see Figure 6b). It would have been obvious to one of ordinary skill in the art at the time of invention to use circulator in the Ryu invention since circulators are well known devices used as coupling three or more optical branches.

Art Unit: 2633

5. Claims 42-56 rejected under 35 U.S.C. 103(a) as being unpatentable over Feldman US 6,650,840 B2 (Feldman) in view of Ryu US 5,793,512 (Ryu) and Boivin et al. US 6,137,611 (Boivin).

Re claim 45-56, Feldman disclosed

A passive optical network, comprising: a remote node that includes a first demultiplexer (230 of Figure 2), a central office (220 of Figure 2) that includes an incoherent light source (226 of Figure 2) that generates a broadband incoherent light having a bandwidth within the free spectral range (FSR) of the first demultiplexer, and a second demultiplexer (223 of Figure 2) that demultiplexes an upstream signal received from the first demultiplexer to a plurality of receivers coupled to the second demultiplexer, wherein the first demultiplexer slices spectrally the broadband incoherent light to produce a plurality of narrow-band incoherent lights; a plurality of optical network units (240 of Figure 2) that include coherent light sources (242) capable of lasing connected at the output ends of the first demultiplexer,

Feldman does not disclose which emit a wavelength-selective output locked by the narrow-band incoherent lights, wherein the first demultiplexer multiplexes the output signals transmitted from the coherent light sources capable of lasing-, and an optical power splitter to route the broadband incoherent light to the first demultiplexer and the upstream signal from the first demultiplexer to the second demultiplexer.

Ryu disclosed injecting a laser device (e.g., col./line: 5/25-35).

Boivin disclosed where LEDs could be used as a source (1 of Figure 2 in Ryu) for a mode-locked laser (e.g., col./line: 6/20-25). It would have been obvious to one of

Art Unit: 2633

ordinary skill in the art at the time of invention to use the LED as injection source in the Ryu invention in order to gain inexpensive wavelength source since LEDs are known to be cheaper than lasers.

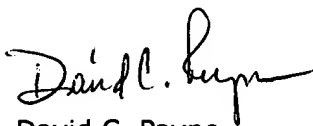
### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (571) 272-3024. The examiner can normally be reached on M-F, 7a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dcp



David C. Payne  
Patent Examiner  
AU 2633